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# 89F. Utilizing Environment Knowledge for Competitive Advantage

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## ***Abstract***

The business environment is increasingly becoming uncertain and complex due to many factors and as a result environmental knowledge is becoming critical for organizations to survive and remain profitable in a highly dynamic, competitive, and volatile business environment. Organizations need to continuously monitor their environment and use this knowledge for making necessary adjustments in their business moves to stay relevant and competitive in the market. The main objective of this study was to investigate the environment scanning initiatives of Small and Medium Enterprises (SMEs) in Singapore and how this knowledge was processed, shared and utilized. A pre-tested questionnaire was used for collecting data and 46 SMEs, representing different industries, participated in the study. It was found that a majority of the participating companies were facing severe competition and nearly 85% of them considered environmental knowledge critical to their survival and growth. However, only one-half of the companies were regularly capturing, filtering, and disseminating the environment knowledge to their staff, while the remaining companies were undertaking these activities on an ad-hoc basis. This paper offers certain suggestions for systematic capturing and utilizing of environment knowledge by SMEs.

## ***Keywords***

Environment Scanning, Competitor Intelligence, External Knowledge, Small and Medium Enterprises (SMEs), and Singapore

## **1. Introduction**

Current business environment is becoming more uncertain, turbulent, and challenging due to many factors such as rapid globalization, technological innovations, frequent economic crises, mergers and alliances, changing lifestyles, terrorism threats, political realignments, epidemics, and natural disasters. Consequently, environment scanning is becoming critical for all types of organizations to survive and remain successful in a highly dynamic, competitive, and volatile environment. Organizations need to closely monitor their micro and macro environments and use this knowledge for making necessary adjustments in their strategies (Kamoun-Chouk, 2007). According to Albright (2004), environment scanning focuses on the identification of emerging issues, trends, events, and potential dangers that may affect an organization's future. External knowledge collected through environment scanning can be used for evaluating organization's strengths and weaknesses in response to external threats and opportunities.

In other words, environment scanning is a process of identifying, collecting, processing and translating information about external influences into useful plans and decisions (Hough, 2004). Continuous and systematic environment scanning enables an organization to avoid surprises and gain competitive edge over its competitors through timely and effective decision-making.

Myburgh (2004) defines environmental scanning as “the gathering of information about the organization’s external environments, the interpretation and analysis of the information and the use of the analyzed intelligence in strategic decision making”. Environment scanning is an encompassing concept and covers disciplines such as competitor intelligence, competitive intelligence, business intelligence and social intelligence (Choo, 2002). Knowledge collected through environment scanning can be utilized for daily decision-making, tactical and strategic planning, and for organizational learning.

### **1.1 Significance of External Environment**

The external environment refers to relevant social and physical factors outside the typical boundaries of an organization which affect managerial decision-making (McGee & Sawyerr, 2003). As external environment can create uncertainty and pose significant threats, it is increasingly becoming vital for organizations to closely monitor their external environments to improve and sustain their performance and growth (Temtime, 2004). Broadly the external environment can be divided into two major categories: the domain or near environment and the general or far environment (Myburgh, 2004). The domain environment includes those factors that may immediately and directly affect operations, performance, and outcomes of an organization. In addition to competitors of the organization, this environment also includes those companies with whom the organization has business relationships with such as customers, suppliers and other stakeholders. Organizations monitor their domain environment very closely as any significant change in it can instantaneously affect them and any delay in response could be lethal. General or far environment includes those factors that may indirectly or in the long run affect an organization’s operations, performance and growth. These may include economical, political, demographical, social and cultural, regulatory/legal, technological and other environmental factors.

Frequency, effort level, and allocation of financial and manpower resources for environment scanning depend on the perceived level of environmental uncertainty and complexity faced by an organization. According to Robbins and Coulter (2005), the environmental uncertainty can be viewed from two dimensions: degree of change, and degree of complexity. If environmental changes are minimal and predictable, it is called a ‘stable’ environment. On the other hand, if components in an organization’s environment are vibrant, unpredictable and changing frequently, it is considered a ‘dynamic’ environment. The other dimension of uncertainty considers the degree of environmental complexity, which refers to the number of components in an organization’s environment and the extent of knowledge that the organization should acquire about these components. If there are only a few simple, predictable and somewhat similar

components that do not change frequently, it is considered a 'simple' environment. However, if many components in an environment are likely to affect functioning of an organization, it is considered a 'complex' environment. Components in this environment are dissimilar and may change quite frequently (Robbins & Coulter, 2005).

## **1.2 Small and Medium Enterprises (SMEs) in Singapore**

Although Singapore is a small island-state with a total land area of 685 sq km, it is recognized as one of the best countries in the World for providing conducive business environment. It is estimated that currently over 130,000 business establishments are operating in Singapore and SMEs are considered backbone of its economy. These companies are key driving force for innovation and creation, and contributing substantially to the national economy through providing employment opportunities, exports, and investments. Around 92% of the business organizations in Singapore fall under this category and contribute up to 25% to the Gross Domestic Product of the country (ASME, 2008). According to the Association of Small and Medium Enterprises (ASME), Singapore, a company not more than 200 employs, fixed assets not exceeding \$15 million and at least 30% local equity is categorized as a SME.

While increased globalization and popularity of e-commerce initiatives have created new business opportunities for SMEs, these companies face serious challenges and intense competition from local and overseas competitors. Under these circumstances, it is imperative for SMEs to regularly and systematically scan their external environment for gaining competitive edge over their competitors. The purpose of this study was to investigate the type of environmental knowledge sought and deemed useful by SMEs, various sources used for this purpose, and how the gathered knowledge was processed, analyzed, stored, and shared in the organization.

## **2. Method**

A pre-tested survey questionnaire was used for gathering data for this study. The sampling frame was obtained from two sources: Directory of Singapore 500 SMEs which provided names, addresses and contact information of the top 500 SMEs in Singapore. Since small businesses are known to have a high mortality and mobility rate, the addresses and telephone numbers were crosschecked with the latest telephone directory. In addition, an Internet resource of SME directory at <http://www.singapore-business.com/> was also used to obtain names and addresses of SMEs which were not included in the SME 500 directory. A common list of companies from these two sources was developed for generating a random sample of 200 companies. The sample companies came from a broad spectrum of industries including information technology, logistics, transportation, travel, hospitality, education, financial services, printing and publishing, and food processing. The target respondents were the senior managers in these companies as most of them were expected to be more knowledgeable about their external environments as well as directly involved in planning and decision-making. After two reminders, a total of 46 filled-in questionnaires were returned, resulting in a response rate of 23%. This

response rate was consistent with other survey-based studies conducted on SMEs in Singapore, which yielded a low response rate (Sum et al, 2004).

### 3. Findings

A high proportion of the respondents were from travel and hospitality (39.1%), and info-communication technology sectors (37%). The printing and publishing sector contributed 5 responses (10.8%) while three companies (6.5%) were from the financial services area. One response each (2.2%) was from the retail, education and professional services sectors. The employment size of the companies ranged from 6 to 100 employees, with a mean of 31.2 employees per company. Most of the participating companies were relatively young, although five of the travel firms were established more than thirty years ago. The mean age of the sample companies was 15.6 years.

#### 3.1 Importance of Environmental Knowledge

The participating companies were asked about the level of uncertainty and competition faced by them. The findings revealed that travel and hospitality companies were operating in a very uncertain and unpredictable business environment. Similarly, companies engaged in ICT (Info-Communication Technology) businesses were also encountering such pressures. On the other hand, printing/publishing and financial services companies felt that their business environments were comparatively less uncertain and volatile. The companies participating in this study were also asked about the importance of environmental knowledge to their survival and profitability. The companies engaged in printing and publishing (mean score: 4.67) and ICT related businesses (mean score: 4.46) felt that environmental knowledge was very important for them (Table 1). The travel and hospitality companies also felt that environmental knowledge was important (mean score: 4.09) for their business success. The correlation between the perception of business uncertainty and importance attached to environmental knowledge was not significant ( $r=0.065$ ), indicating that companies consider environmental knowledge important even if their external environment appear to be stable.

Industry	N	Mean (1 ~ 5)	Standard Deviation
Printing/ Publishing	5	4.67	.58
Info-communication Technologies (ICT)	13	4.46	.87
Travel/ Restaurants/ Hospitality	23	4.09	.92
Financial Services	3	4.00	1.00
Others	3	4.33	1.16

**Table 1:** Importance of Scanning by Industry

### 3.2 Responsibility of Environment Scanning

The participating companies were asked who in their company was responsible for gathering environmental knowledge. A vast majority of the companies (29 or 63%) reported assigning this responsibility to an individual manager (Table 2). Six firms (13%) said that they have a separate department for gathering the environmental knowledge.

Industry	Scanning Responsibility				Total
	Assigned to an Individual	Assigned to a Specific Department	Outsourced	Other	
Travel/ Restaurants/ Hospitality	16 (72.8%)	4 (18.2%)	1 (4.5)	1 (4.5%)	22
ICT	7 (53.8%)	2 (15.4%)	-	4 (30.8%)	13
Printing/ Publishing	3 (60.0%)	-	-	2 (40.0%)	5
Financial Services	1 (33.3%)	-	-	2 (66.7%)	3
Others	2 (66.7%)	-	-	1 (33.3%)	3
<b>Total</b>	<b>29 (63.0%)</b>	<b>6 (13.0%)</b>	<b>1(2.2%)</b>	<b>10 (21.7%)</b>	<b>46</b>

**Table 2:** Responsibility for Scanning

It is noteworthy that 10 firms reported “other” ways for gathering external environmental knowledge. Of these, eight firms indicated that all employees were responsible for scanning. Three of these came from the ICT sector, two each from printing/ publishing and financial services sectors and one from education. One IT firm said that most of the scanning was done by the CEO. This was a relatively small firm with only 7 employees. One IT firm reported that it did not have a formal mechanism for gathering external knowledge and it was done on an informal basis.

### 3.3 Scope of Environmental Knowledge

For the purpose of analysis, 14 possible areas of knowledge gathering were categorized into 4 major groups. The first group “Domain environment” included information about competitors and their products and services, labour market situation, and technological developments (Table 3). The second group called “Singapore macro-environment” gathered knowledge about Singapore economic, legal, political and social situations. The third group “ASEAN macro-environment” sought knowledge related to economic, legal and political situation in South-east Asian countries. The fourth group called “Global macro-environment” included knowledge related to global economic, legal and political situations.

The data analysis revealed that knowledge about competitors, local markets, technological developments, and general business environment in Singapore was

important to the participating companies. It appeared that, although small in size and business scope, SMEs in Singapore feel that they also need to gather knowledge about their general or far environment for sustaining their businesses. Probably it was due to the fact that business environment in Singapore is very attractive for overseas companies as well as local SMEs are looking beyond Singapore for expanding their businesses.

Environment Type	N	Mean Score (1 ~ 5)	Standard Deviation
Domain Environment	46	3.86	0.74
Singapore Macro-environment	46	3.54	0.86
Global Macro-environment	45	3.41	0.95
ASEAN Macro-environment	46	3.36	0.89

**Table 3:** Scope of Environmental Knowledge Gathering

### 3.4 Knowledge about Competitors

As competitor intelligence is crucial for the business success of SMEs, this area was further explored to investigate the type of knowledge often sought. It was found that most of the participating companies were focusing on the pricing information (76.1%), new products and services (65.2%), and business strategies (63%) of their competitors (Table 4). Relatively few companies appeared to be interested in gathering information about competitors' business partners (28.3%), competitors' distribution channels (26.1%), their financial reports (19.6%), and suppliers (15.2%).

Competitor Intelligence Type	No. of Companies
Pricing information	35 (76.10%)
New products and service	30 (65.20%)
Business strategies and plans	29 (63.00%)
Technology utilization	26 (56.50%)
Competitor customers	23 (50.00%)
Competitor cost structure	21 (45.70%)
Competitor business partners	13 (28.30%)
Competitor distribution channels	12 (26.10%)
Competitor financial reports	9 (19.60%)
Competitor suppliers	7 (15.20%)

**Table 4:** Competitor Intelligence Activity

### 3.5 Frequency of External Knowledge Gathering

The participating companies were asked about the frequency of different knowledge gathering and utilization activities undertaken by them such as needs assessment, knowledge gathering, processing, dissemination and utilization. It was found that only a limited number of companies were ‘always’ undertaking environment scanning activities, except knowledge sharing and utilization activities which were done by more than 21% of the companies. It is worth noting that over 31% of the companies were ‘rarely’ processing and repackaging knowledge gathered from the external environment. Similarly, around 20% of the companies said that the collected knowledge was rarely shared in their organizations.

Activity	Frequency of Activity		
	Always	Most of the time	Rarely
Needs assessment	4 (8.7%)	34 (73.9%)	8 (17.4%)
Knowledge searching and gathering	8 (17.4%)	32 (69.6%)	6 (13.1%)
Selecting and filtering knowledge	7 (15.2%)	35 (76.1%)	4 (8.6%)
Processing and report generation of gathered external knowledge	7 (15.6%)	24 (53.3%)	14 (31.2%)
Sharing of environmental knowledge	10 (21.7%)	27 (58.7%)	9 (19.5%)
Utilizing environmental knowledge for decision-making	11 (23.9%)	29 (63.1%)	6 (13.1%)

**Table 5:** Frequency of Scanning Activities

### 3.6 Sources of Environment Knowledge

The participating firms were asked about the relative importance of different sources in capturing the environmental knowledge. For this purpose, 19 knowledge sources were organized into three broad categories. The human sources included customers, suppliers, distributors, business partners, creditors, investors, and business consultants. The published sources comprised newspapers, magazines, professional journals, industrial and organizational reports, conferences, exhibitions and trade shows. The online sources included the WWW, online databases, intranet, extranet, and other digital sources. It was found that human sources were most heavily used by the participating companies (Table 6). Among the human sources, customers, business partners, and business consultants were considered more important for gathering environmental knowledge. Among the published sources, newspapers, magazines, industrial reports, professional journals, and trade exhibitions were considered more useful. Finally, among the online sources, World Wide Web and electronic databases were preferred for capturing environmental knowledge.



Source Type	N	Mean Score (1 ~ 5)	Standard Deviation
Human knowledge sources	46	3.83	.71
Published knowledge sources	46	3.49	.82
Online knowledge sources	46	3.34	.85

**Table 6:** Sources for Capturing Environmental Knowledge

### 3.7 Knowledge Processing and Storage

Twenty-eight (60.9%) companies reported that they perform some processing before disseminating the gathered external knowledge to the intended users. The remaining 18 (39.1%) companies reported using this knowledge without any processing. Of the 28 companies processing the gathered knowledge, 16 (57%) were undertaking filtering to remove irrelevant information, 14 (50%) were repackaging the knowledge collected from multiple sources, and 18 (64.3%) companies were providing possible interpretation of the gathered knowledge to its intended users.

It was also found that the surveyed companies were using a variety of methods for organizing and storing the gathered external environmental knowledge, some deploying multiple storage methods. The corporate intranet or local server was used by 19 (41.3%) companies, while traditional paper filing system and in-house databases were used by 18 (39.1%) companies each. Two companies reported that they have not yet devised any mechanism for organizing and storing the gathered environmental knowledge.

### 3.8. Knowledge Dissemination and Use

It was found that 20 (43.4%) companies were using ad hoc reports for disseminating the knowledge gathered through environment scanning (Table 7). Periodic reports were generated by 12 (26%) companies and 11 (23.9%) were also preparing comprehensive reports on specific topics or trends. However, regular alerting service for informing the staff about new developments in the external environment was maintained by only 8 (17.4%) of the organizations. One firm which chose the “other” category indicated that information is disseminated through word of mouth.

Dissemination Method	No. of Companies
Ad-hoc reports	20 (43.4%)
Periodic reports	12 (26.0%)
Comprehensive reports on specific events or trends	11 (23.9%)
Regular alerting service	8 (17.4%)
Others	3 (6.5%)

**Table 7:** Knowledge Dissemination Methods

However, when asked how frequently these methods were used for knowledge dissemination, a majority of the participating companies revealed that they were using these methods only rarely. It appeared that a considerable number of the companies were using irregular reports for disseminating environmental knowledge to their employees.

The participating SMEs were also asked about the use of different communication channels for disseminating environmental knowledge to their staff. It was found that face-to-face communication was the most frequently used method, followed by e-mail, and telephone (Table 8). It was interesting to note that intranet was the least preferred methods for knowledge sharing. It was probably due to the fact that many small SMEs do not have adequate resources for properly developing and maintaining their intranets. Probably due to smaller size of SMEs, most of the knowledge sharing was either through face-to-face mode or easily available tools such as e-mail and telephone.

Communication Channel	Frequency of Usage			
	N	Most of the Time	Rarely	Never
Face-to-Face	46	26 (56.5%)	12 (26.1%)	8 (17.4%)
E-mail	46	24 (52.2%)	10 (21.7%)	12 (26.1%)
Telephone	46	23 (50.0%)	12 (25.1%)	11 (23.9%)
Printed reports	44	13 (28.2%)	14 (30.4%)	17 (37.0%)
Intranet	44	10 (21.8%)	12 (26.1%)	22 (47.8%)

**Table 8:** Channel Used for Knowledge Dissemination

Finally, the participating companies were asked about the recipients of knowledge gathered through the environment scanning. It was found that over 57% of the companies were sharing the environmental knowledge with their sales staff, unit managers, and other professional staff. It was interesting to note that only 22% of the companies were sharing this knowledge with their top management. It was probably due to the fact that a majority of the surveyed companies were basically scanning their domain or near environments and such knowledge is often more useful for tactical or operational decision making by middle managers.

## 4. Conclusion

The findings of this study suggest that a majority of SME companies in Singapore, irrespective of uncertainty and volatility of their business environment, considered environment scanning crucial for their survival and growth. It is understandable as rapid globalization and robust economic activities in the Southeast Asian region are expected to result in intense competition in the coming years. In addition to other measures, these companies need to adequately understand and closely monitor their immediate business environments to avoid any surprises. Moreover, as certain business sectors in Singapore are now considered well-established and saturated, SMEs need to explore business opportunities in other emerging markets which is only possible through active environment scanning. On the contrary, findings of this study suggest that a majority of the SMEs were gathering environmental knowledge on an ad hoc basis and were utilizing it without proper processing. In order to make environmental knowledge more relevant, meaningful and valuable, all SMEs even those with limited manpower and financial resources, should undertake this activity more regularly and systematically. However, if they do not afford to appoint a full-time information professional for this purpose, they can either get one of their existing staff trained in environment scanning techniques or outsource some of the scanning activities to vendors specializing in this area.

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